

# TAVERO<sup>®</sup> HEA2<sup>®</sup>

Grinding Aid/Pack Set Inhibitor

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## Product Description

HEA2<sup>®</sup> is an aqueous solution of an amine acetate salt with the following specifications:

- Specific Gravity: 1.145 - 1.175
- Insolubles: 0.1% max.
- pH: 8 - 10
- Viscosity: 33 cps @ 21 °C
- Foaming Tendency: None

HEA2<sup>®</sup> is one of the most effective dispersants yet developed for use as a grinding aid/pack set inhibitor for Portland cement and other hydraulic cements.

HEA2<sup>®</sup> greatly improves the efficiency of the grinding process by reducing the surface energy forces which cause agglomeration of the newly fractured cement particles. HEA2 is effective in both open circuit and closed circuit cement mills.

## Advantages

Increased mill output at same cement fineness:

More than 30 years of industrial HEA2 usage at cement plants in America, Europe and Asia-Pacific indicate the following typical production increases:

BLAINE SURFACE AREA (CM <sup>2</sup> /GRAM)	TYPICAL MILL OUTPUT INCREASE (%)
2700 - 3100	8 - 15
3100 - 3500	10 - 20
3500 - 4000	12 - 25
4000 - 5000	15 - 30
over 5000	20 - 40

### Reduced grinding costs:

The increased mill output with HEA2<sup>®</sup> at same cement fineness and energy consumption provides savings through lower grinding costs per ton of cement.

### Higher cement strengths:

ASTM test data shows that HEA2<sup>®</sup> significantly increases compressive and flexural strengths of cements, particularly at early ages. Increases as high as 25% are not uncommon; however the average for all tests, as well as for all ages is 10%.

### Increased cement flowability:

The dry dispersive action of HEA2<sup>®</sup> results in vast improvements in cement flowability characteristics. A marked reduction of pack set or "silo set" is also noticeable for HEA2<sup>®</sup> treated cements.

The improved flowability of cements with HEA2<sup>®</sup> results in faster loading and unloading times of bulk tankers. Capacities of pneumatic conveying equipment are also increased.

A test method for assessing the pack set index (stickiness) of cements is available upon request.

Typical information establishing the correlation between pack set index and flowability of cement was shown in a study where pack set indices versus pumping rates, through a 1500 meter Fuller Kinyon line, were measured and compared.

PACK SET INDEX	PUMPING RATE IN TONS/HOUR
23	42
19	80
7	110

### Greater bulk density:

HEA2<sup>®</sup> increases the bulk density of cement by up to five percent, providing increased storage capacities of silos and bulk carriers.

### Controlled set times:

Special HEA2<sup>®</sup> formulations designed to extend cement setting times are available through your GCP representative.

## Handling

HEA2<sup>®</sup> may be dispensed as received. However, dilution with 5 parts water or more is recommended to ensure greater proportioning accuracy and better additive distribution. Suitable dispensing pumps with adjustable flow rates should be used for optimum performance. Diluted HEA2<sup>®</sup> may be added onto the clinker conveyor belt or sprayed into the mills first compartment.

## Addition Rates

HEA2<sup>®</sup> typical dosage rates will vary from 0.01% - 0.05% by weight of cement for Types I & II cements and 0.04% - 0.08% by weight of cement for Type III cements.

BLAINE SURFACE AREA (CM <sup>2</sup> /GRAM)	HEA2 DOSAGE RATE % BY WEIGHT OF CEMENT
2700 - 3500	0.01 - 0.02
3500 - 4500	0.02 - 0.04
over 4500	0.04 - 0.06

## Dosing Equipment

GCP grinding aids should be accurately proportioned through a calibrated dosing system, suitable for the cement mill and output required.

## Specification Compliance

Approved for use under ASTM C 465 specification as a non-harmful processing addition, HEA2<sup>®</sup> has been thoroughly tested and is widely used in the cement industry.

## Packaging

HEA2<sup>®</sup> is supplied in 210 L (55 gal) drums, or in bulk by tanker trucks. It contains no flammable materials.

## Storage

Protect from freezing. Once frozen, the product should be thawed out slowly and re-mixed thoroughly prior to use.

## Technical Services

Field Engineers from GCP Products are available to assist in laboratory and mill test evaluations of HEA2<sup>®</sup>. Complete testing equipment and methods for analyzing mill performance and pack set index are also available during plant trials.

[gcpat.com](http://gcpat.com) | North America Customer Service: 1 877-4AD-MIX1 (1 877-423-6491)

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